



Sheet 1 of 4

US Dept. of Commerce PATENT & TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTY DOCKET NO. 97005-US-DIV1	APPLICATION NO. 09/933,960
	APPLICANT(S) Robert L. THORNTON	
	FILING DATE August 20, 2001	GROUP 2828

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number	Date	Name
JM	1	4,144,101	03/13/1979	Rideout
	2	5,073,041	12/17/1991	Rastani
	3	5,115,442	05/19/1992	Lee et al.
	4	5,126,875	06/30/1992	Tabuchi
	5	5,171,703	12/15/1992	Lin et al.
	6	5,179,567	01/12/1993	Uomi et al.
	7	5,245,622	09/14/1993	Jewell et al.
	8	5,258,990	11/02/1993	Olbright et al.
	9	5,262,491	11/16/1993	Jain et al.
	10	5,331,654	07/19/1994	Jewell et al.
	11	5,354,709	10/11/1994	Lorenzo et al.
JM	12	5,400,354	03/21/1995	Ludowise et al.
	13	5,412,680	03/02/1995	Swihart et al.
JM	14	5,416,044	05/16/1995	Chino et al.
	15	5,557,627	09/17/1996	Schneider, Jr. et al.
	16	5,568,499	10/22/1996	Lear
	17	5,581,571	12/03/1996	Holonyak, Jr. et al.
	18	5,594,751	01/14/1997	Scott
	19	5,633,527	05/27/1997	Lear
	20	5,659,193	08/19/1997	Ishigaki
	21	5,717,533	02/10/1998	Poplawski et al.
	22	5,727,014	03/10/1998	Wang et al.
	23	5,734,588	03/31/1998	Rose et al.
	24	5,739,945	04/14/1998	Tayebati
	25	5,809,051	09/15/1998	Oudar
	26	5,864,468	01/26/1999	Poplawski et al.
	27	5,881,085	03/09/1999	Jewell
	28	5,897,329	04/27/1999	Jewell
JM	29	5,903,588	05/11/1999	Gunter et al.

Date: July 27, 2006

/James Menefee/

10/02/2006

JM	30	5,903,589	05/11/1999	Jewell		
↓	31	6,014,395	01/11/2000	Jewell		
	32	6,052,399	04/18/2000	Sun		
	33	09/552,568	04/19/2000	Jewell		
	34	6,069,908	05/30/2000	Yuen et al.		
	35	6,075,804	06/13/2000	Deppe et al.		
↓	36	6,148,016	11/14/2000	Hegblom et al.		
JM	37	6,201,704	03/13/2001	Poplawski et al.		
	38	6,208,601	03/27/2001	Thornton		
JM	39	6,269,109	07/31/2001	Jewell		
	40	6,297,068	10/02/2001	Thornton		
	41	6,304,588	10/16/2001	Thornton		
JM	42	2002/0097764	07/25/2002	Jewell		
JM	43	6,459,719	10/01/2002	Jewell		
JM	44	2004/0062284	04/01/2004	Jewell		
JM	45	6,765,943	07/20/2004	Jewell		
FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation
JM	46	JP 10-065266	03/06/1998	Japan	Y	Y
JM	47	JP 10-125999	05/15/1998	Japan	Y	Y
JM	48	JP 10-229248	08/25/1998	Japan	Y	Y
JM	49	EP 0 858 137 A3	04/19/2000	EPO		
OTHER DOCUMENTS						
Examiner Initials	Cite No.	(Including Author, Title, Date, Pertinent Pages, etc.)				
JM	50	A.R. Sugg et al., <u>Native Oxide-Embedded Al_{0.5}Ga_{0.5}As-GaAs-In_{0.5}Ga_{0.5}As Quantum Well Heterostructure Lasers</u> , Appl. Phys. Lett. 62(11) 1259 (Mar. 15, 1993).				
	51	B.J. Thibeault et al., <u>Reduced Optical Scattering Loss in Vertical-Cavity Lasers Using a Thin (300 Å) Oxide Aperture</u> , IEEE Photonics Tech. Lett. 8(5) 593 (May 1996).				
	52	C.L. Chua et al., <u>Low-Threshold 1.57-µm VC-SEL's Using Strain-Compensated Quantum Wells and Oxide-Metal Backmirror</u> , IEEE Photonics Tech. Lett. 7(5) 444 (May 1995).				
	53	D.G. Deppe et al., <u>Atom Diffusion and Impurity-Induced Layer Disorder in Quantum Well III-V Semiconductor Heterostructures</u> , J. Appl. Phys. 64(12) R93 (Dec. 15, 1988).				
	54	D.G. Deppe et al., <u>Very-Low-Threshold Index-Confined Planar Microcavity Lasers</u> , IEEE Photonics Tech. Lett. 7(9) 965 (Sept. 1995).				
	55	D.L. Huffaker et al., <u>Improved Mode Stability in Low Threshold Single Quantum Well Native-Oxide Defined Vertical-Cavity Lasers</u> , Appl. Phys. Lett. 65(21) 2642 (Nov. 21, 1994).				
	56	D.L. Huffaker et al., <u>Lasing Characteristics of Low Threshold Microcavity Lasers Using Half-Wave Spacer Layers and Lateral Index Confinement</u> , Appl. Phys. Lett. 66(14) 1723 (Apr. 3, 1995).				
↓	57	D.L. Huffaker et al., <u>Low-Threshold Half-Wave Vertical-Cavity Lasers</u> , Elec. Lett. 30(23) 1946 (Nov. 10, 1994).				
JM	58	D.L. Huffaker et al., <u>Native-Oxide Defined Ring Contact for Low-Threshold Vertical-Cavity Lasers</u> , Appl. Phys. Lett. 65(1) 97 (July 4, 1994).				

Date: July 27, 2006

/James Menefee/ 10/02/2006

JM	59	D.L. Huffaker et al., <u>Spontaneous Coupling to Planar and Index-Confined Quasimodes of Fabry-Perot Microcavities</u> , Appl. Phys. Lett. 67(18) 2595 (Oct. 30, 1995).
	60	D.L. Huffaker et al., <u>Threshold Characteristics of Planar and Index-Guided Microcavity Lasers</u> , Appl. Phys. Lett. 67(1) 4 (July 3, 1995).
	61	E.R. Hegblom et al., <u>Estimation of Scattering Losses in Dielectrically Apertured Vertical Cavity Lasers</u> , Appl. Phys. Lett. 68(13) 1757 (Mar. 25, 1996).
	62	F. Koyoma et al., <u>Wavelength Control of Vertical Cavity Surface-Emitting Lasers by Using Nonplanar MOCVD</u> , IEEE Photonics Tech. Lett. 7(1) 10 (Jan. 1995).
	63	F.A. Kish et al., <u>Dependence on Doping Type (p/n) of the Water Vapor Oxidation of High-Gap $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$</u> , Appl. Phys. Lett. 60(25) 3165 (June 22, 1992).
	64	F.A. Kish et al., <u>Low-Threshold Disorder-Defined Native-Oxide Delineated Buried-Heterostructure $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$-GaAs Quantum Well Lasers</u> , Appl. Phys. Lett. 58(16) 1765 (Apr. 22, 1991).
	65	F.A. Kish et al., <u>Native-Oxide Stripe-Geometry $\text{In}_{0.5}(\text{Al}_{0.5}\text{Ga}_{1.5})_{0.5}\text{P-In}_{0.5}\text{Ga}_{0.5}\text{P}$ Heterostructure Laser Diodes</u> , Appl. Phys. Lett. 59(3) 354 (July 19, 1991).
	66	F.A. Kish et al., <u>Planar Native-Oxide $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$-GaAs Quantum Well Heterostructure Ring Laser Diodes</u> , Appl. Phys. Lett. 60(13) 1582 (Mar. 30, 1992).
	67	G. Ronald Hadley et al., <u>Comprehensive Numerical Modeling of Vertical-Cavity Surface-Emitting Lasers</u> , IEEE J. Quantum Elec. 32(4) 607 (Apr. 1990).
	68	G.M. Yang et al., <u>Ultralow Threshold Current Vertical-Cavity Surface-Emitting Lasers Obtained with Selective Oxidation</u> , Elec. Lett. 31(11) 886 (May 25, 1995).
	69	Giorgio Giaretta et al., <u>A Novel 4 x 8 Single-Mode Independently Addressable Oxide-Isolated VCSEL Array</u> , IEEE Photonics Tech. Lett. 9(9) 1196 (Sept. 1997).
	70	Gye Mo Yang et al., <u>Influence of Mirror Reflectivity on Laser Performance of Very-Low-Threshold Vertical-Cavity Surface-Emitting Lasers</u> , IEEE Photonics Tech. Lett. 7(11) 1228 (Nov. 1995).
	71	H.Y. Chu et al., <u>Polarization Characteristics of Index-Guided Surface Emitting Lasers with Tilted Pillar Structure</u> , Elec. Lett. 9(8) 1066 (1997).
	72	I. Babić Dubravko et al., <u>Room-Temperature Continuous-Wave Operation of 1.54-μm Vertical-Cavity Lasers</u> , IEEE Photonics Tech. Lett. 7(11) 1225 (Nov. 1995).
	73	J. Cibert et al., <u>Kinetics of Implantation Enhanced Interdiffusion of Ga and Al at GaAs-Ga_{0.5}Al_{1.5}As Interfaces</u> , Appl. Phys. Lett. 49(4) 223 (July 28, 1986).
	74	J.M. Dallesasse et al., <u>Native-Oxide Masked Impurity-Induced Layer Disorder of $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$ Quantum Well Heterostructures</u> , Appl. Phys. Lett. 58(9) 974 (Mar. 4, 1991).
	75	J.M. Dallesasse et al., <u>Native-Oxide Stripe-Geometry $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$-GaAs Quantum Well Heterostructure Lasers</u> , Appl. Phys. Lett. 58(4) 394 (Jan. 28, 1991).
	76	J.M. Dallesasse et al., <u>Native-Oxide-Defined Coupled-Stripe $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$-GaAs Quantum Well Heterostructure Lasers</u> , Appl. Phys. Lett. 58(8) 834 (Feb. 25, 1991).
	77	J.M. Dallesasse et al., <u>Stability of AlAs in $\text{Al}_{0.5}\text{Ga}_{1.5}\text{As}$-GaAs Quantum Well Heterostructures</u> , Appl. Phys. Lett. 56(24) 2436 (June 11, 1990).
	78	Jack L. Jewell et al., <u>Surface-Emitting Lasers Break the Resistance Barrier</u> , Photonics Spectra (Nov. 1992).
	79	K.D. Choquette et al., <u>Cavity Characteristics of Selectively Oxidized Vertical-Cavity Lasers</u> , Appl. Phys. Lett. 66(25) 3413 (June 19, 1995).
	80	K.D. Choquette et al., <u>Continuous Wave Operation of 640-660nm Selectively Oxidized AlGaInP Vertical-Cavity Lasers</u> , Elec. Lett. 31(14) 1145 (July 6, 1995).
	81	K.D. Choquette et al., Elec. Lett. 32(5) 459 (Feb. 29, 1996).
	82	K.D. Choquette et al., <u>Fabrication and Performance of Selectively Oxidized Vertical-Cavity Lasers</u> , IEEE Photonics Tech. Lett. 7(11) 1237 (Nov. 1995).
V	83	K.D. Choquette et al., <u>Low Threshold Voltage Vertical-Cavity Lasers Fabricated by Selective Oxidation</u> , Elec. Lett. 30(24) 2043 (Nov. 24, 1994).
JM	84	K.L. Lear et al., <u>High-Frequency Modulation of Oxide-Confined Vertical Cavity Surface Emitting Lasers</u> , Elec. Lett. 32(5) 457 (Feb. 29, 1996).

JM	85	K.L. Lear et al., <u>Modal Analysis of a Small Surface Emitting Lasers with a Selectively Oxidized Waveguide</u> , Appl. Phys. Lett. 66(20) 2616 (May 15, 1995).
	86	K.L. Lear et al., <u>Index Guiding Dependent Effects in InAlAs and Oxide Confined Vertical-Cavity Laser</u> , IEEE Photonics Tech. Lett., vol. 8, pp. 740-742, (June 1996).
	87	K.S. Giboney et al., <u>The Ideal Light Source for Datacenters</u> , IEEE Spectrum 43 (Feb. 1998).
	88	L.A. Coldren et al., <u>Dielectric Apertures as Intracavity Lenses in Vertical-Cavity Lasers</u> , Appl. Phys. Lett. 68(3) 313 (Jan. 15, 1996).
	89	M. Ochiai et al., <u>Kinetics of Thermal Oxidation of AlAs in Water Vapor</u> , Appl. Phys. Lett. 68(14) 1898-1900 (Apr. 1, 1996).
	90	M.R. Krames et al., <u>Buried-Oxide Ridge-Wavelength InAlAs-InP-InGaAsP ($\lambda \sim 1.3 \mu\text{m}$) Quantum Well Heterostructure Laser Diodes</u> , Appl. Phys. Lett. 64(21) 2821 (May 23, 1994).
	91	M.R. Krames et al., <u>Deep-Oxide Planar Buried-Heterostructure InAlAs-InP-InGaAsP ($\lambda \sim 1.3 \mu\text{m}$) Quantum Well Heterostructure Laser Diodes</u> , Appl. Phys. Lett. 65(25) 3221 (Dec. 19, 1994).
	92	Michael H. MacDougall et al., <u>Electrically-Pumped Vertical-Cavity Lasers with Al₂O₃-GaAs Reflectors</u> , IEEE Photonics Tech. Lett. 8(3) 310 (Mar. 1996).
	93	Michael H. MacDougall et al., <u>Ultralow-Threshold Current Vertical-Cavity Surface-Emitting Lasers with AlAs Oxide-GaAs Distributed Bragg Reflectors</u> , IEEE Photonics Tech. Lett. 7(3) 229 (Mar. 1995).
	94	Michael H. MacDougall et al., <u>Wide-Bandwidth Distributed Bragg Reflectors Using Oxide/GaAs Multilayers</u> , Elec. Lett. 30(14) 1147 (July 7, 1994).
	95	N. El-Zein et al., <u>Native Oxide Coupled-Cavity Al_{0.5}Ga_{0.5}As-GaAs Quantum Well Heterostructure Laser Diodes</u> , Appl. Phys. Lett. 59(22) 2838 (Nov. 25, 1991).
	96	O. Blum et al., <u>Electrical and Optical Characteristics of AlAsSb/GaAsSb Distributed Bragg Reflectors for Surface Emitting Lasers</u> , Appl. Phys. Lett. 67(22) 3233 (Nov. 27, 1995).
	97	P.D. Floyd et al., <u>Comparison of Optical Losses in Dielectric-Apertured Vertical-Cavity Lasers</u> , IEEE Photonics Tech. Lett. 8(5) 590 (May 1996).
	98	P.D. Floyd et al., <u>Vertical Cavity Lasers</u> , Elec. Lett. 32(2) 114 (Jan. 18, 1996).
	99	S.A. Maranowski et al., <u>Al_{0.5}Ga_{0.5}As-GaAs-In_{0.5}Ga_{0.5}As Quantum Well Heterostructure Lasers with Native Oxide Current-Blocking Windows Formed on Metallized Devices</u> , Appl. Phys. Lett. 64(16) 2151 (Apr. 18, 1994).
	100	S.A. Maranowski et al., <u>Native Oxide Top- and Bottom-Confined Narrow Stripe p-n Al_{0.5}Ga_{0.5}As-GaAs-In_{0.5}Ga_{0.5}As Quantum Well Heterostructure Laser</u> , Appl. Phys. Lett. 63(12) 1660 (Sept. 20, 1993).
	101	T.J. Rogers et al., <u>Influence of Cavity Tuning on the Transverse Mode in Vertical-Cavity Lasers</u> , IEEE Photonics Tech. Lett. 7(3) 238 (Mar. 1995).
	102	Y. Hayashi et al., <u>Lasing Characteristics of Low-Threshold Oxide Confinement InGaAs-GaAlAs Vertical-Cavity Surface-Emitting Lasers</u> , IEEE Photonics Tech. Lett. 7(11) 560 (Nov. 1995).
	103	Y. Hayashi et al., <u>Record Low-Threshold Index-Guided InGaAs/GaAlAs Vertical-Cavity Surface-Emitting Laser with a Native Oxide Confinement Structure</u> , Elec. Lett. 31(7) 560 (Mar. 30, 1995).
▼	104	Y. Kobayashi et al., <u>Application of Selective Oxidation Structure to Common-Anode SEL</u> , Advance Compilation of Lectures of the 57 th Scientific Lecture Meeting of the Society of Applied Physics Vol. 3 p. 926 (No. 7p-KH-11) (Fall 1996) (with partial English-language translation).
JM	105	Yong-Soo Lee et al., <u>Wet Oxidation of AlAs Grown by Molecular Beam Epitaxy</u> , Appl. Phys. Lett. 65(21) 2717 (Nov. 21, 1994).
EXAMINER		/James Menefee/
		DATE CONSIDERED 10/02/2006
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

Date: July 27, 2006